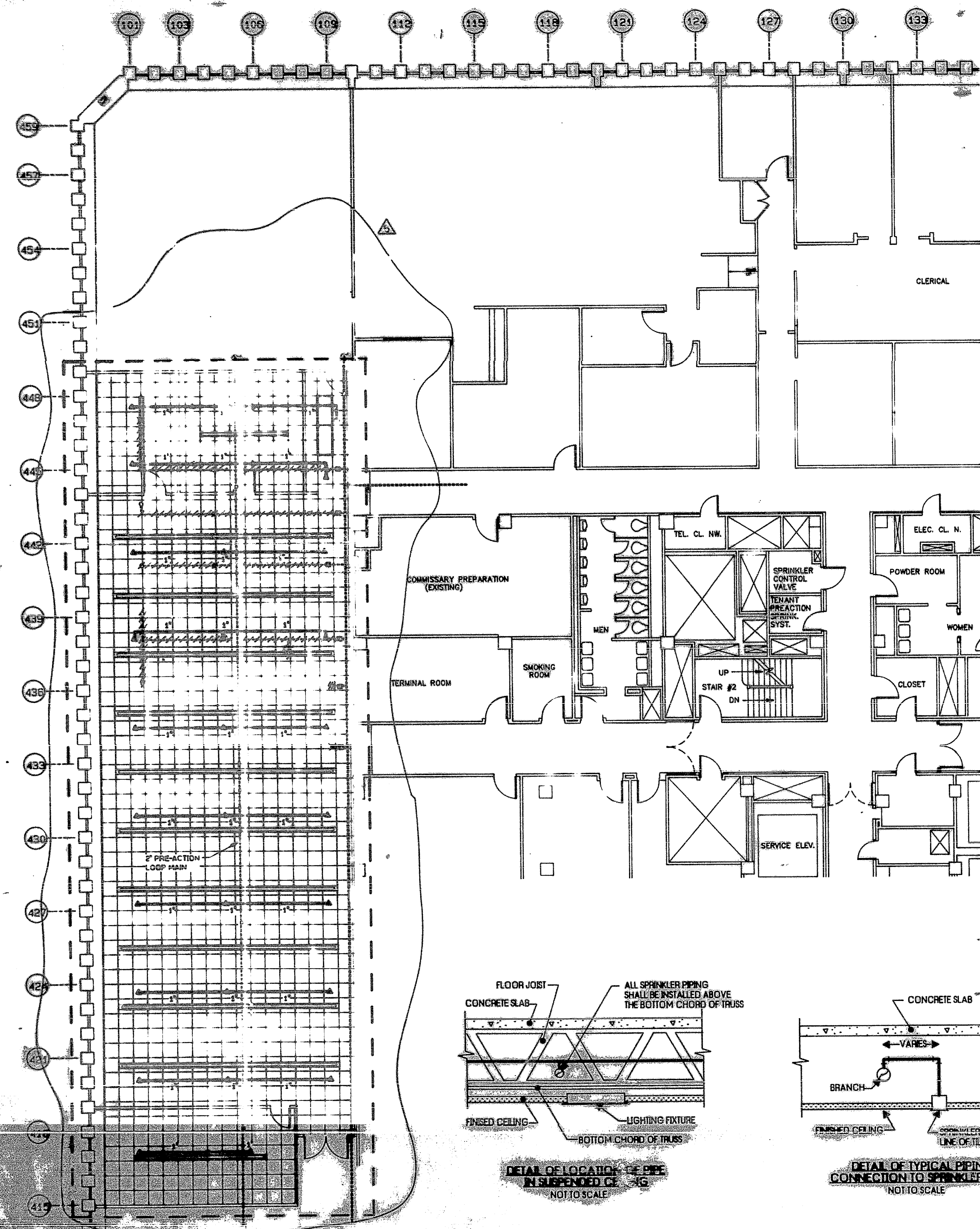


445-451
 CANTOR FITZGERALD
 A-105
 3/24/95
 SP-1

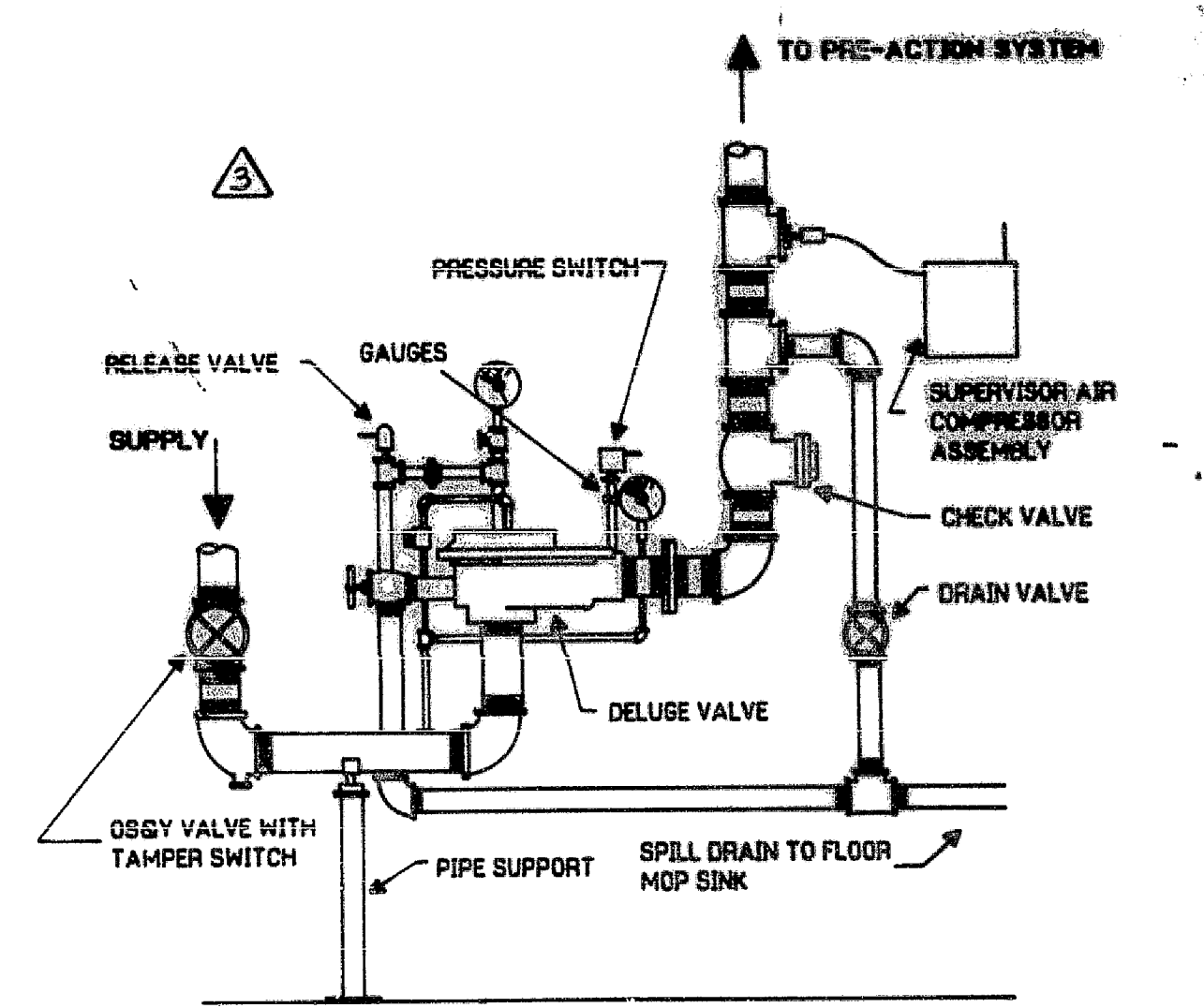
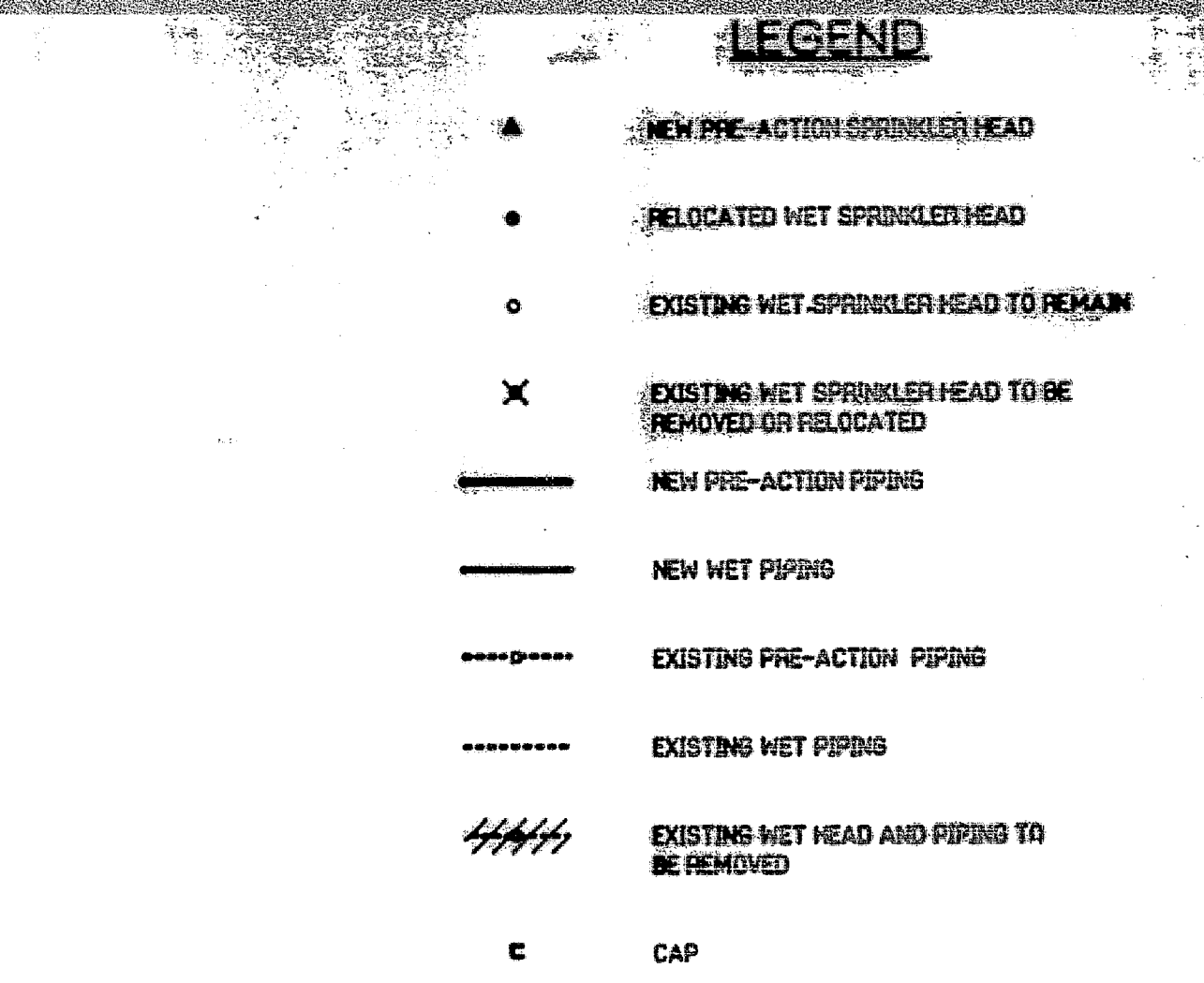


SPRINKLER SPECIFICATIONS

- Shutdown of existing system: At the time that such closing or opening of valves and draindown becomes necessary, the Contractor shall notify the WTC Construction Division (at least 48 hours in advance) who will make the necessary arrangements. The Contractor shall keep the shutdown time to a minimum and drainage shall be to a properly connected receptacle without causing damage to other work and property.
- Heads: Sprinkler Heads shall be Reliable Automatic Sprinkler Co. concealed type Model "G-4", 165 degree F rating, 1/2" orifice SS & A #557-75-SA or approved equal. Polished chrome. New spin air heads shall be installed whether heads are shown as new or relocated, as per NFPA 13, Section 1-8.1.1.
- Pipe and Fittings: Piping shall be Schedule 40, standard weight, black steel pipe, ASTM standard A795/53. Fittings shall be cast iron, 175 lbs. class threaded.
- All horizontal piping parallel to and within 15'-0" of exterior walls shall be insulated with 1" fiberglass insulation.
- Piping and fittings shall be insulated where required by the contract drawings with one inch (1") thick heavy density fiberglass pipe covering with factory applied all service jacket (ASJ), self-sealing lap and built straps bonded with aluminum straps (2" on centers), and pre-molded fiberglass for fittings. Insulation shall be similar in all respects to that manufactured by Owens-Corning Fiberglass. Insulation (including jacket or facing and adhesive) shall have a flame spread rating not greater than 25, smoke developed rating 50.
- Piping shall be installed to drain back to flow control valve.
 - Loop main shall be above bottom chord of truss.
 - Branch lines shall run through bridging trusses.
- Flush: Before final connections and sprinkler heads are installed, all piping shall be thoroughly blown out, rodged out, and washed out at least twice in a manner as directed by the Engineer to remove all accumulation of dirt, chips or other deleterious material. Make all temporary connections and furnish all appliances required for the purpose of cleaning at no extra expense to the Authority.
- Pipe passing through walls shall have a trim opening cut no greater than necessary for the installation of a sleeve secured therein. Sleeves shall be made of Schedule 40 galvanized steel pipe for floor slabs and 20 gauge sheet metal for frame partitions. Sleeves shall be 1/2" in diameter larger than the outside diameter of the pipe or required insulation passing through, and of sufficient length to be flush with the finished wall surface. Annular spaces between piping and sleeves or core drilled floor openings shall be packed with thermofiber and sealed to retain the fire integrity of the walls and floors with a non-hardening compound similar and equal to Duxseal as manufactured by J. M. Clipper Co.
- Hangers: Install suitable clevis type hangers supported from the existing building steel framing. Drilling/anchoring systems will be permitted. Drilling only when approved by the Engineer. Use Hilti HDU anchors.

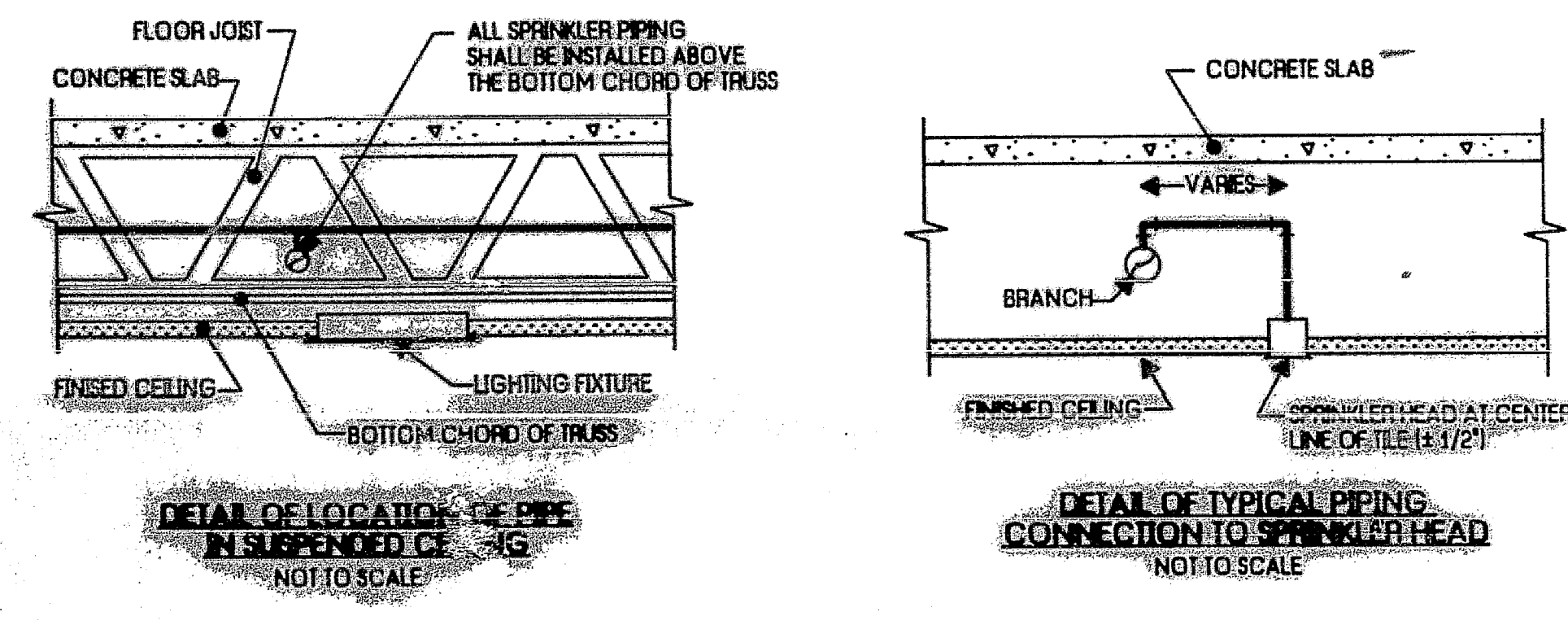
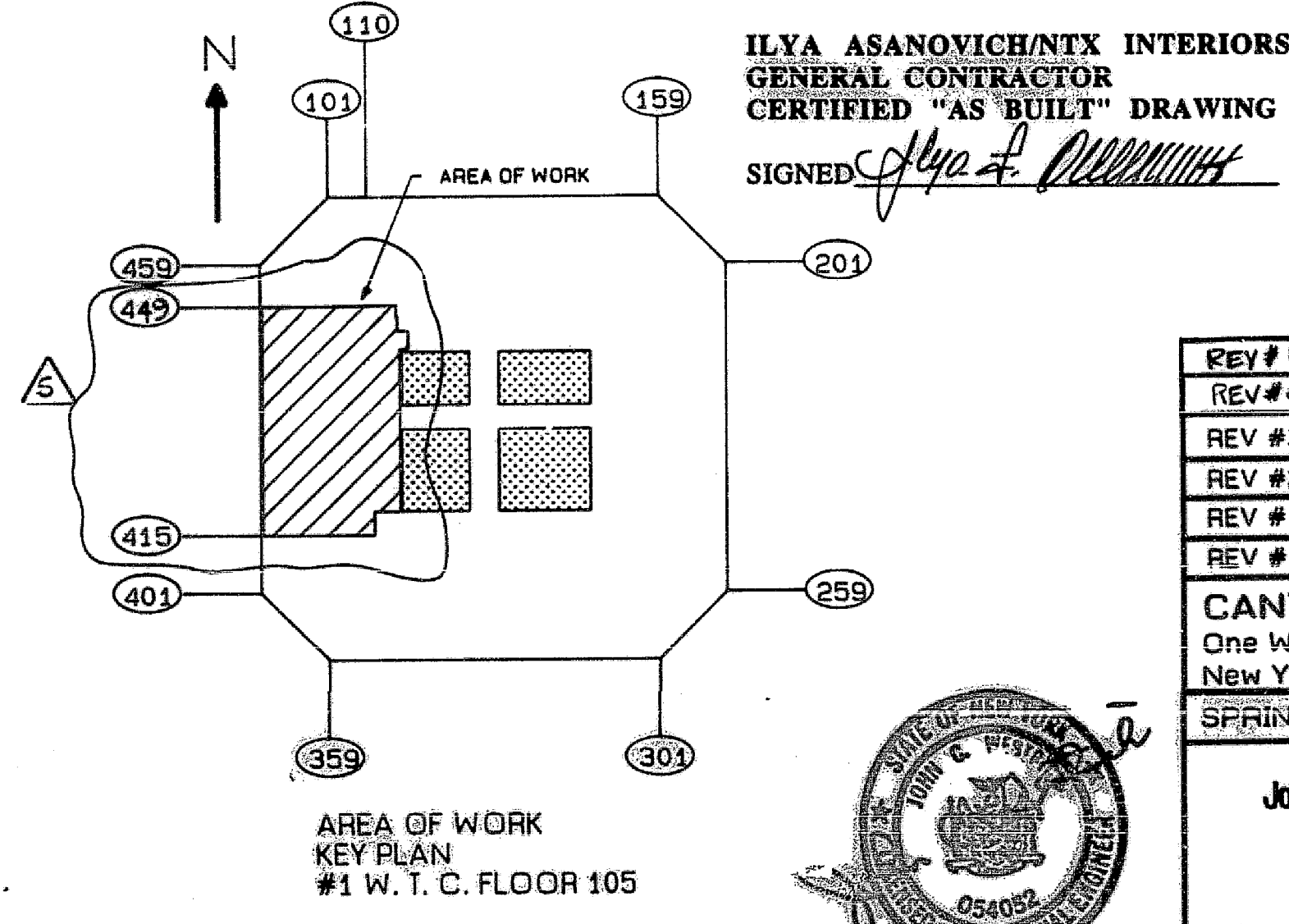
Pipe Size	Max. Hanger Spacing	Min. Rod Size
1"	8'-0" O.C.	3/8"
1 1/4" to 2"	10'-0" O.C.	3/8"
2 1/2" to 3"	12'-0" O.C.	1/2"

- All piping shall be installed above the bottom chord of the trusses.
- Test: Entire installation shall be tested hydrostatically and remain tight with no loss of pressure for a period of no less than two (2) hours against a pressure of 200 psig. Remaining portion of the floor system shall be isolated from the testing procedure. Testing shall be performed in the presence of the Engineer and Port Authority Inspector. At least (48) hours notice shall be given in advance of all tests.
- Code: Entire installation shall comply with all provisions of the NYC Building Code.
- Affix identification markers on all sprinkler piping. Markers shall be at 10' - on centers. Markers shall be Brady Snap-On, Type 8, W.H. Brady Co. Sign Mark Division. Markers shall read "SPRINKLER PIPING".
- Disturbance of structural fireproofing shall be kept to a minimum and precaution shall be observed for work above the ceiling.
- Contractor shall submit detailed shop drawings to the Engineer for approval. No work shall commence until approval is obtained.
- All unused piping, ductwork, hangers, supports, shall be completely removed all the way back to the core riser closet, or back to the nearest branch main and capped, sealed watertight or airtight. All the openings shall be properly patched, sealed, and fire stopped to maintain the original integrity of the partition's fire rating.
- Contractor shall provide a hydraulic calculation to verify pipe size. The hydraulic calculation shall include:
 - available static pressure on the floor.
 - the minimum water supply requirement density, gpm per square foot.
 - area of hydraulic demand.
 - occupancy hazard classification.
 - sprinkler piping and fittings material.
 - all existing piping sizes.



PRE-ACTION VALVE ASSEMBLY DETAIL *
 NO SCALE

* PRE-ACTION VALVE ASSEMBLY IS EXISTING, DETAIL IS SHOWN FOR INFORMATION PURPOSES ONLY. (NO WORK REQ'D.)



REV #	DESCRIPTION	DATE
REV # 5	CERTIFIED AS-BUILT, RESUBMITTED FOR RECORD	3-24-95
REV # 4	REVISED AS PER PORT AUTHORITY COMMENTS	7/13/94
REV # 3	REVISED AS PER ARCHITECTURAL CHANGES	6/3/94
REV # 2	REVISED AS PER ARCHITECTURAL CHANGES	2/27/94
REV # 1	REVISED AS PER PORT AUTHORITY COMMENTS	2/5/94
REV #	DESCRIPTION	DATE

CANTOR FITZGERALD SECURITIES CORP.
 One World Trade Center Floor 105
 New York, N.Y. 10048
SPRINKLER PLAN, SPECIFICATIONS, AND DETAILS
John C. Westrick & Associates Inc.
 CONSULTING ENGINEERS
 2110 Maple Avenue
 South Plainfield, N.J. 07080

SCALE: AS SHOWN
 DATE: 12/17/93
 OWN BY: P.E.
 PROJECT # 93173
 CHECKED BY: JOW
 SP-1